Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-4. (Canceled)

5. (Currently Amended) A plasma generator, comprising:

a) a vacuum chamber comprising four sidewalls;

b) a stage located within the vacuum chamber on which a base plate is to be placed;

c) multiple radiofrequency (RF) antennas arranged substantially parallel to the stage within the vacuum ~~chamber~~chamber,

wherein the RF antennas are disposed on each of the four sidewalls of the vacuum chamber and surround the vacuum chamber; and

d) a plate-shaped conductor connected to the multiple RF antennas in parallel and arranged outside the vacuum chamber, where a distance between a connection point at which the power source supplying the power to the RF antennas is connected to the plate-shaped conductor and each connection point at which each RF antenna is connected to the plate-shaped conductor is made shorter than the quarter wavelength of the RF wave.

6. (Previously Presented) The plasma generator according to claim 5, wherein a sum of the length of the conductor of RF antenna and the distance between the aforementioned connection points is smaller than the quarter wavelength of the RF power.

7. (Previously Presented) The plasma generator according to claim 5, wherein each of the multiple RF antennas is divided into groups, each including one or more RF antennas, and a RF power is supplied to each RF antenna in parallel within each group, the plasma generator comprising:

a phase detector for detecting a phase of the RF power supplied to each of the groups; and

a phase matcher for regulating the phase of the RF power.

8. (Currently Amended) A plasma generator comprising:

a) a vacuum chamber;

b) a stage located within the vacuum chamber on which a base plate is to be placed; and

c) multiple RF antennas arranged substantially parallel to the stage with the vacuum chamber, where an aspect ratio of ~~the~~ an RF antenna at a position corresponding to a target area of the stage is larger than that of an other RF antenna so as to increase the plasma density or electron density at the target area~~is set at a value determined according to a plasma density or plasma electron energy desired for the target area~~.

9. (Canceled)

10. (Currently Amended) The plasma generator according to ~~claim 9~~claim 8, wherein the target area includes a center of the stage.

11. (Currently Amended) A plasma generator comprising:

a) a vacuum chamber;

b) a stage located within the vacuum chamber, on which a base plate is to be placed; and

c) ~~multiple~~ three or more RF antennas provided on an inner wall surface of the vacuum chamber so as to surround an inner place of the vacuum chamber, ~~where~~ adjacent electrodes of one or more pairs of adjacent RF antennas ~~have~~ having the same polarity,

wherein the ~~multiple~~ three or more RF antennas are substantially ~~U-shaped~~U-shaped, and

wherein one electrode of each RF antenna is connected to a power source and an other electrode of each RF antenna is connected to a ground.

12. (Previously Presented) The plasma generator according to claim 11, wherein the adjacent electrodes of every pair of the adjacent RF antennas have the same polarity.

13. (Currently Amended) A plasma generator comprising:

a) a vacuum chamber;

b) a stage located within the vacuum chamber, on which a base plate is to be placed;

c) multiple RF antennas arranged substantially parallel to the stage within the vacuum chamber; ~~and~~

d) an impedance element that has a variable impedance value is connected to each of the RF antennas that regulates a current or voltage of each RF ~~antenna~~antenna;

e) a measurement unit for measuring a voltage or current of each RF antenna,

wherein the measurement unit includes a pick-up coil that is located in proximity to an RF antenna that has a projected portion projecting to an outside of the vacuum chamber and the pick-up coil is capable of detecting a current of the RF antenna within its proximity,

wherein the measurement unit includes a capacitor,

and wherein the pick-up coil and the capacitor are located close to the projected portion; and

f) a controller for setting the variable impedance value on the basis of the voltage or current measured with the measurement unit.

14. (Previously Presented) The plasma generator according to claim 13, wherein multiple RF antennas are connected to one RF power source in parallel.

15. (Previously Presented) The plasma generator according to claim 13, wherein one RF antenna is connected to one RF power source.

16. (Canceled)

17. (Currently Amended) The plasma generator according to ~~claim 16~~claim 13, wherein the impedance element is a variable inductance coil.

18. (Canceled)

19. (Canceled)

20. (Currently Amended) The plasma generator according to ~~claim 18~~claim 13, wherein the ~~measurement unit includes a~~ capacitor ~~that is located in proximity to an RF antenna and~~ detects a voltage applied to the RF antenna.

21. (Currently Amended) The plasma generator according to ~~claim 18~~claim 13, wherein the measurement unit includes a bridge circuit or a wave detector for converting a detected signal of RF current or voltage into a direct current or voltage.

22. (Currently Amended) The plasma generator according to ~~claim 18~~claim 13, wherein the measurement unit includes a mixer for mixing a current signal and a voltage signal of the RF antenna and a low-pass filter for removing a RF component from the mixed signal.

23. (Previously Presented) The plasma generator according to claim 5, wherein a surface of the RF antennas is coated with an insulator.

24. (Previously Presented) The plasma generator according to claim 5, wherein the shape of the RF antennas within the vacuum chamber is flat.

25. (Previously Presented) The plasma generator according to claim 5, wherein each of the multiple RF antennas are divided into groups each including one or more RF antennas, and a RF power is supplied to each RF antenna in parallel within each group.

26. (Canceled)

27. (Currently Amended) A plasma control method using a plasma generator having multiple RF antennas located within a vacuum chamber comprising four sidewalls, said antennas being arranged on each of the four sidewalls of the vacuum chamber and surrounding the vacuum chamber, ~~one or both of a sidewall and a ceiling wall of the vacuum chamber~~ and roughly parallel to a stage on which a base plate is to be placed, and having a plate-shaped conductor connected to the multiple RF antennas in parallel and arranged outside the vacuum

chamber, wherein a state of plasma is controlled by regulating a distance between a connection point at which the power source supplying the power to the RF antennas is connected to the plate-shaped conductor and each connection point at which each RF antenna is connected to the plate-shaped conductor.

28. (Previously Presented) The plasma control method according to claim 27, wherein the state of plasma is controlled by regulating a phase difference of the RF power supplied to the RF antennas.

29. (Currently Amended) A plasma control method using a plasma generator having multiple RF antennas located within a vacuum chamber, said antennas being arranged on one or both of a sidewall and a ceiling wall of the vacuum chamber and roughly parallel to a stage on which a base plate is to be placed, wherein an aspect ratio of an RF antenna located at a position corresponding to a target range of the stage is set to a larger value than that of an other RF antenna so as to increase a plasma density or an electron energy at the target area~~determined according to a plasma density or plasma electron energy desired for the target area, or according to ion species or radical species to be generated in the target area~~.

30. (Canceled)

31. (Currently Amended) The plasma control method according to ~~claim 30~~claim 29, wherein the target ~~area~~ range includes the center of the stage.

32. (Currently Amended) A plasma control method using a plasma generator having ~~multiple~~ three or more RF antennas located within a vacuum chamber, said antennas being arranged on one or both of a sidewall and a ceiling wall of the vacuum chamber so as to surround an inner space of the vacuum chamber, wherein a plasma density distribution within the plasma generator is controlled by giving an equal polarity to adjacent electrodes of one or more pairs of adjacent RF antennas,

wherein the ~~multiple~~ three or more RF antennas are substantially U-shaped, and

wherein one electrode of each RF antenna is connected to a power source and an other electrode of each RF antenna is connected to a ground.

33. (Previously Presented) The plasma control method according to claim 32, wherein the adjacent electrodes of every pair of the adjacent RF antennas have the same polarity.

34. (Currently Amended) A plasma control method ~~suing~~ using a plasma generator having multiple RF antennas located within a vacuum chamber, said antennas being arranged on one or both of a sidewall and a ceiling wall of the vacuum chamber and roughly parallel to a stage on which a base plate is to be placed, a measurement unit for measuring a voltage or current of each RF antenna arranged in proximity to an RF antenna that has a projected portion projecting to an outside of the vacuum chamber, the measurement unit includes a pick-up coil for detecting a current of the RF antenna within its proximity and a capacitor, wherein the pick-up coil and the capacitor are located close to the projected portion, wherein an impedance element that has a variable impedance value for regulating a current or a voltage of each RF antenna is connected to each of the RF antennas and a controller is used for setting the variable impedance value on the basis of the voltage or current measured with the measurement unit, and a plasma density distribution within the vacuum chamber is controlled by regulating ~~an~~ the impedance value of each impedance element.

35. (Currently Amended) The plasma control method according to claim 34, wherein ~~the impedance value of the impedance element is variable, one or~~ both of ~~a~~ the voltage and the current of each RF antenna are measured, and the variable impedance value is controlled according to ~~the voltage, the current or~~ a product of the voltage and the current measured.

36. (Previously Presented) A method of producing a substrate, wherein plasma of a material is generated by a plasma generator according to claim 5 and the material is deposited.

37. (Previously Presented) A method of producing a substrate, wherein an etching process is carried out using plasma generated by a plasma generator according to claim 5.

38. (Previously Presented) The plasma generator according to claim 5, wherein the RF antennas are attached on one or both of a sidewall and a ceiling wall of the vacuum chamber.

39. (Previously Presented) The plasma generator according to claim 8, wherein the RF antennas are attached on one or both of a sidewall and a ceiling wall of the vacuum chamber.

40. (Previously Presented) The plasma generator according to claim 11, wherein the RF antennas are attached on one or both of a sidewall and a ceiling wall of the vacuum chamber.

41. (Previously Presented) The plasma generator according to claim 13, wherein the RF antennas are attached on one or both of a sidewall and a ceiling wall of the vacuum chamber.

42. (Previously Presented) The plasma generator according to claim 8, wherein a surface of the RF antennas is coated with an insulator.

43. (Previously Presented) The plasma generator according to claim 11, wherein a surface of the RF antennas is coated with an insulator.

44. (Previously Presented) The plasma generator according to claim 13, wherein a surface of the RF antennas is coated with an insulator.

45. (Previously Presented) The plasma generator according to claim 8, wherein the shape of the RF antennas within the vacuum chamber is flat.

46. (Previously Presented) The plasma generator according to claim 11, wherein the shape of the RF antennas within the vacuum chamber is flat.

47. (Previously Presented) The plasma generator according to claim 13, wherein the shape of the RF antennas within the vacuum chamber is flat.

48. (Previously Presented) The plasma generator according to claim 8, wherein each of the multiple RF antennas are divided into groups each including one or more RF antennas, and a RF power is supplied to each RF antenna in parallel within each group.

49. (Previously Presented) The plasma generator according to claim 11, wherein each of the multiple RF antennas are divided into groups each including one or more RF antennas, and a RF power is supplied to each RF antenna in parallel within each group.

50. (Previously Presented) The plasma generator according to claim 13, wherein each of the multiple RF antennas are divided into groups each including one or more RF antennas, and a RF power is supplied to each RF antenna in parallel within each group.

51. (Previously Presented) A method of producing a substrate, wherein plasma of a material is generated by a plasma generator according to claim 8 and the material is deposited.

52. (Previously Presented) A method of producing a substrate, wherein plasma of a material is generated by a plasma generator according to claim 11 and the material is deposited.

53. (Previously Presented) A method of producing a substrate, wherein plasma of a material is generated by a plasma generator according to claim 13 and the material is deposited.

54. (Previously Presented) A method of producing a substrate, wherein an etching process is carried out using plasma generated by a plasma generator according to claim 8.

55. (Previously Presented) A method of producing a substrate, wherein an etching process is carried out using plasma generated by a plasma generator according to claim 11.

56. (Previously Presented) A method of producing a substrate, wherein an etching process is carried out using plasma generated by a plasma generator according to claim 13.